APPENDIX H
PHYSICAL FITNESS FACILITIES (APPROPRIATED)

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APPENDIX H
PHYSICAL FITNESS FACILITIES (APPROPRIATED)

1. GENERAL AND SPECIFIC CRITERIA.

a. General. The specific criteria contained in this appendix are applicable to the design of Physical Fitness Facilities (PFF) that are normally funded from appropriated funds. The general criteria contained in preceding chapters are applicable where such criteria are not included in this appendix. Therefore, this appendix must be used with the chapters contained in this document.

b. The Center of Standardization (COS). The COS for PFF is the Huntsville Engineering and Support Center (CEHNC).

c. Applicability.

(1) Except as modified here, the design of new PFF and existing facilities to be modernized will be in accordance with the design criteria Architectural and Engineering Instructions (AEI) and this appendix, including all references.

(2) Obsolete Criteria. DG 1110-3-128 and previous DA standard designs are obsolete and will not be used when designing PFF. The criteria contained in the design guide and standard designs has been superseded by new DA standard designs (references H-1 thru H-6) and this appendix.

2. PLANNING GUIDANCE.

a. Project Justification. The requirements for PFF will be carefully determined, taking into consideration all pertinent factors such as the tenure of the installation, number of military personnel or population to be served, accessibility and capabilities of existing, similar civilian or military community-type facilities, climatic conditions affecting the use of the proposed facility, and the impact on morale.

b. Site Planning Criteria. Before proceeding with the site planning of a project, the project requirements should be verified to assure that they meet the user needs and that the selected site meets approval procedures. When these verifications are complete, a site design may be developed in accordance with the siting criteria in Chapter 3.

c. Funding Policy. Funding for the establishment, construction, maintenance, and operation of certain PFF will be according to DoD Directive 1015.6 (reference H-7).

d. Computation of Gross Areas. The gross area of facilities will be computed according to the definition in chapter 5 of the AEI. Unless otherwise noted, mechanical, electrical, and electronics equipment room space as required will be added to the gross areas shown in the following subparagraphs when determining a single gross area figure for a project DD Form 1391.

e. Space Criteria. Table H-1 contains the space criteria for PFF. Generally these facilities include gear issue control, gymnasium, locker rooms, offices, exercise room(s), spectator area, storage, and toilet facilities. This type of facility is intended to be capable of supporting basic physical fitness skill training requirements. New PFF will be designed in accordance with the approved Department of the Army (DA) Standard Design Packages, DEF 740-28-01 through DEF 740-28-06 (references H-1 through H-6).

TABLE H-1 SPACE CRITERIA FOR PHYSICAL FITNESS FACILITIES (GYMNASIUMS)			
MILITARY POPULATION [1]	NUMBER OF GYMNASIUMS	GROSS AREA [2]	
		square meters	(square feet)
Up to 250	Note [3]	None	None
251 to 1,000	1	1600	(17,222)
1,001 to 3,000	1	3300[4]	(35,521)[4]
3,001 to 6,000	1	5500	(59,202)
6,001 to 10,000	2	7400	(79,653)
10,001 to 15,000 [5]	1	8750	(94,184)

[1] Military population is defined as active duty military personnel assigned to the installation, plus 25 percent of their dependents. Additionally, at those CONUS installations where the civilian work-force is 60% of the total work-force, then 10% of the civilian population may be used.

[2] These gross areas do not include the optional and or flexible features (except the exercise/weight rooms), e.g., the actual size required for mechanical, electrical, and electronic equipment rooms, pool filter room, pool storage room, racquetball courts, sauna, solarium, etc., as identified in the DA standard designs (see references H-1 through H-6).

[3] No gym authorized, physical activities will be combined with a multi purpose recreation building.

[4] Both a 3300 m^2 (35,521 ft^2) and a 3000 m^2 (32,292 ft^2) standard PFF design are available for this military population.

[5] For each active duty military strength increment of 3,300 personnel above 15,000, an additional gymnasium of 2,000 m^2 (21,528 ft^2) gross area may be provided.

3. COMBINED FACILITIES. In general, construction and maintenance costs will be lowered and convenience to the users enhanced in recreation facilities if the use of multi-purpose recreation, and fitness and athletic centers is encouraged. See appendix "D" of this AEI for criteria and guidance on the types of combined facilities.

4. DESIGN REQUIREMENTS.

a. General.

(1) Coordination at all stages of design development of PFF new construction projects, including modernization projects in excess of $150,000, is required with the MACOM engineer and MACOM PFF coordinator; the installation facilities engineer and using service PFF coordinator; and HQ DA (CFSC-ZR-RS). HQUSACE (CEMP-MA) will be notified immediately when project cost estimates exceed the DA approved Program Amount (PA).

(2) Provisions for Physically the Handicapped. All PFF will be fully accessible to physically impaired adults and children in accordance with chapter 7 of the AEI.

(3) Functional spaces are grouped according to similar function. These spaces are divided into four distinct groups which represent primary plan elements.

(a) Activity spaces (gymnasium, natatorium, exercise room, weight rooms, handball/racquetball courts, squash courts).

(b) Support spaces (locker rooms, showers, supply/issue, laundry, sauna, steam rooms and jogging track).

(c) Staff spaces (administrative areas).

(d) Public spaces (lobby, rest rooms, vending area, spectator areas).

(e) Adjacency. Spaces must be organized to provide optimum adjacency in relationships.

(f) Circulation. Spaces must be organized to establish a workable and convenient circulation flow, which establishes a spatial hierarchy. For example, a spectator will enter the PFF lobby area with access to the staff spaces. The staff spaces serve as control/observation point; from the lobby area a spectator will enter the seating area of gymnasium, natatorium spectator area, or handball/racquetball spectator area. Similarly, a participant will enter the PFF public spaces and then proceed to the locker rooms (support area) and from there go to the gymnasium, exercise room, weight room or natatorium. In each case the sequence and spatial hierarchy are similar-from public space to staff and support spaces to activity spaces.

(g) Evacuation. Spaces must be organized so that evacuation can be done effectively and safety. Consideration must be given to occupancy load and type, the location of emergency exits and other life safety features. Direct evacuation routes must be evident.

b. Standardization. CONUS and OCONUS PFF projects shall be based on the DA Standard Design Package for Physical Fitness Facilities, DEF 740-28-01 through DEF 740-28-06 (references H-1 through H-6).

(1) These designs provide options and or flexible features, e.g., mechanical, electrical and electronic equipment rooms, pool filter room, pool storage room, racquetball courts, sauna, solarium, exterior finishes, interior finishes, etc. The options and or flexible features selected for final design will be those that will assure an adequate, cost effective, and safe design for each project. Acceptable modifications to the standard designs are limited to the requirements as described in paragraph 4.d.

(2) When site adapting standard designs for PFF, design agencies are authorized by ER 1110-345-710 (reference H-8) and ER 1110-345-100 (reference H-9) modify the drawings to meet local climatic, foundation, seismic, siting, and topographic conditions, and other site specific requirements. However, modifications that affect the functional and operational requirements of the standard designs are not authorized. See the preceding paragraph.

(3) Requests to deviate from the standard designs (references H-1 through H-6) for economical, functional, or operational reasons during the design process must be submitted for approval in accordance with the DA approved Standard Operating Procedures for waivers.

c. Site Design Criteria. A site design should be developed in accordance with the siting criteria discussed in Chapter 3 of the AEI. Verification of project requirements, a site analysis, sketch site plan and concept site plan should be developed. Additional site design guidance is provided in TM 5-803-5 (reference H-10).

(1) Installation Design Guide. The guidance provided in the Installation Design Guide will be used to design

these projects, (reference Chapter 3 of this AEI).

(2) Landscape Planting Design. The landscape planting design will be accomplished in accordance with the requirements of TM 5-803-13 (reference H-11).

d. Architectural Criteria.

(1) Design Restraint. Design restraint must be applied to all projects. Architectural embellishments to the standard designs (references H-1 through H-6) are not authorized.

(2) Exterior design and context. The overall site development and building design will consider the environment. Building placement will consider circulation patterns, landscaping, existing vegetation, views, climatic factors and solar effects. The character of the building design should blend with the surrounding environment without necessarily copying it. The blending can be achieved by sympathetic use of form, materials and/or color. Respect for local building style and techniques should be maintained where practicable. Exterior building materials should be selected for appropriateness, economy, availability, visual interest and energy conservation.

(3) Materials and Finishes.

(a) Interior and exterior colors, finishes, and materials will conform to the standard designs (references H-1 through H-6). Where the standard designs allow for alternative colors, finishes and materials, the most economical alternative will be selected that meet the local building requirements. Recommend the use of baked-on finishes in lieu of anodized finishes.

(b) Specific Concrete Masonry Unit (CMU) requirements.

1/ Bullnose blocks should be use whenever the corner (edge) of the block is exposed.

2/ Block fill should be used prior to painting masonry block.

(4) Interior Design. Interior design packages will be developed and funded in accordance with ER 1110-345-122 (reference H-12). See Chapter 6 of this AEI. Interior finishes and colors. Interior finishes and colors will present a unified concept relating to building design, furniture and equipment. Selection will be based on indigenous materials, availability, durability, maintenance and user requirements and comfort. A specific color scheme will be developed throughout the building. Materials should be selected on the basis of compatibility with the design character and color scheme. Vinyl wall coverings and fabrics should be close weave, solid color or muted tones. Recommend materials such as stone, tile, masonry pavers and wood if life cycle costs justify their use. Use of color in Army facilities should be limited to a practical number.

(a) Floor finishes.

1/ Vinyl composition tile. Offices, corridors.

2/ Ceramic tile. Toilet rooms and locker rooms.

3/ Concrete. Mechanical, electrical, and electronic equipment rooms.

4/ Masonry pavers. Recommend brick, quarry tile or other durable and aesthetically pleasing materials for lobby and lounge.

5/ Resilient athletic flooring. Exercise room.

6/ Hardwood floor. Gymnasium.

7/ Rubber tile. Weight room (Free weights area).

8/ Industrial grade carpet. Weight room (Cardiorespiratory and weight machines).

(b) Wall finishes. Concrete masonry units will be the primary wall construction throughout the PFF. Exposed masonry the entire length of the corridor wall, adjacent to locker rooms will provide thermal mass heat storage (heated during winter months by sun through corridor clerestory windows).

(c) Ceiling finishes.

1/ Suspended 600 by 1200 mm or 600 by 600 mm (two feet by four feet or two feet by two feet) (minimum 19.1 mm (3/4 inches) thick) lay-in acoustical tile with exposed grid. Primary ceiling construction throughout the PFF.

2/ Gypsum board (epoxy paint). Toilet rooms, janitor's closet and laundry.

3/ Suspended concealed spine acoustical tile. Recommend only special use areas such as lobby and lounge.

4/ Exposed structure. Mechanical room and storage rooms; and gymnasium/natatorium areas. If handled properly for aesthetics and acoustics, exposed structure may also be used in the weight and exercise rooms.

(5) Furniture and equipment. Furniture and equipment will be selected based on durability, comfort and safety. Furniture is an integral part of the overall design scheme and must be clearly coordinated with selected colors and finish for consistency in appearance and quality. Detailed requirements should be established for individual functional activities. Items which will be procured as part of the construction contract and those which will be procured by others must be carefully specified and coordinated.

(a) Permanent equipment. Furniture and equipment permanently built into or attached to the structure include the following:

1/ Pool equipment.

2/ Built-In counters, sinks and shelving.

3/ Drinking fountains and water coolers.

4/ Central Public Announcing and speaker system and scoreboard.

5/ Telephone, fire alarm and Intercom systems.

6/ Built-In bleachers and lockers.

7/ Built-In movable partitions.

8/ Floor and window coverings.

9/ Chalkboards, bulletin boards, wall mirrors, projection screens and display cases.

10/ Basketball backboards and built-in wall mats.

11/ Diving boards.

12/ Signs and graphics.

(b) Portable and detached equipment. Furniture and equipment that are portable or detached from the structure will be furnished by the installation and funded with some appropriation other than Military Construction Army (MCA).

(c) Furniture style will be simple in shape and proportion and will be consistent with the building design. Furniture materials will be durable but avoid a cold, sterile effect on the users. Neutral colors, which relate to the building materials and finishes are recommended for general furniture groupings with careful use of accent colors to achieve a warm and varied environment. Furniture finishes will complement construction materials; highly decorative and artificial finishes are to be avoided.

(d) Built-In furniture such as millwork will reflect the highest industry construction standards and be of finishes and colors which complement adjacent areas. Recommend that a matte finish (patterned or textured) plastic laminate be applied to exposed surfaces of millwork items. Also, recommend that the bleachers in the gymnasium and the lockers in the locker rooms be built-in type.

(e) Durability is a major factor in furniture selection. Furniture items will be able to withstand extended use as well as regular cleaning. Materials must be flame retardant.

(f) Furniture will be flexible and interchangeable so that shared usage is possible. Furniture pieces will be of a size and construction that are easy to assemble and relocate. Stackable and folding furniture is recommended for ease of transportation and storage.

(6) Signage. A comprehensive signage system will be developed which clearly and concisely presents necessary information. The system will relate interior to the exterior signage system and will enhance the building in terms of color, texture, graphics and placement. Economy, availability, durability, flexibility and standardization will be considered in selecting the signage system. Refer to TM 5-807-10 (reference H-13) and EP 310-1-6a (reference H-14) for specific guidelines on signage.

(a) Identification signs. Pictorial graphics can be used to identify areas such as toilets, handicapped facilities or to regulate activities such as no entry, no smoking or danger. Signs will be coordinated with the identification criteria prescribed in TM 5-807-10 (reference H-13), EP 310-1-6a (reference H-14) and this document. Safety markings will be designed in accordance with AR 385-30 (reference H-15).

(b) Directional signs. Directional signs will be judiciously located along major circulation paths.

(c) Notice boards. A general notice board will be in a major circulation area and small notice boards may be within specific section areas as required. Notice boards will be constructed of fabric-wrapped tack panels and will be securely wall mounted at a height which relates to other signs and building components such as door heights and headers.

e. Options and Flexible Features.

(1) Flexibility and expansion are incorporated in the standard designs (references H-1 through H-6). Spaces can accommodate change in use and future expansion by following the dictated 2200 by 2200 mm (seven by seven foot) grid.

(2) Optional Features.

(a) Saunas.

(b) Air lock vestibule entry.

(c) Handball/racquetball courts.

(d) Handball/racquetball seating.

(e) Solarium, sun-deck and planting area with the natatorium.

(3) Flexible Features.

(a) Locker room male to female ratio and configurations.

(b) Use of doors versus cased openings as codes allow.

(c) Size of mechanical, electrical, and electronic equipment rooms.

(d) Size of weight and exercise rooms.

f. Energy Conservation Criteria. Chapter 11 of the AEI provides the energy conservation criteria for PFF. Additionally, the design of PFF with a natatorium will take maximum advantage of cost effective passive solar features for heating the pool area.

g. Electrical Criteria. In addition to chapter 12 of the AEI, special electrical design requirements exist for the various functional areas of PFF.

(1) The electrical outlets will be designed with the flexible purpose of the PFF in mind.

(2) Placement of electrical outlets in playing surfaces or in floors subject to wet cleaning processes or utilizations should be avoided.

(3) Lighting will be in accordance with the Illuminating Engineering Society Lighting Handbook. Lighting for finished spaces will be part of the ceiling design with standard ceilings and modular recessed lighting fixtures. The ratio of maximum to minimum illumination shall not exceed three to one within a given area.

(4) Sight lines of players and spectators should not permit direct view of light sources.

(5) Administrative telephones will be provided as required. Telephone requirements must be coordinated with the user and the local Director of Information Management.

h. Mechanical Equipment Criteria. In addition to chapters 13 and 14 of the AEI, special mechanical design criteria are provided in the paragraphs for individual space requirements of this appendix.

i. Plumbing Equipment Criteria. In addition to chapter 15 of the AEI, special plumbing design criteria are provided in the paragraphs for individual space requirements of this appendix.

5. Individual Space Requirements. Individual space requirements for physical fitness activities will conform to the DA approved standard designs (references H-1 through H-6).

a. General Use Categories. The areas of the PFF are classified according to general use categories in terms of functional use, adjacency relationships, special considerations, furniture or equipment and space allocations. Mechanical, electrical, and electronic equipment rooms, janitor closets, general circulation corridors, vestibules, and such areas are intrinsic to a PFF and not included in the discussions of the general PFF use categories. The PFF general use categories are:

(1) Activity spaces; gymnasium, natatorium, handball/racquetball and squash courts, exercise room, weight rooms, bowling alleys, and ice rinks.

(2) Support spaces; locker rooms, shower rooms, toilet rooms, sauna/steam rooms, laundry rooms, and supply/issue room.

(3) Staff spaces; manager's office/area, program director's area, clerical area, and conference room, and pool manager/lifeguard office.

(4) Public spaces; lobby, public toilets, and vending area.

b. Gymnasium.

(1) Functional Use.

(a) basketball, boxing, wrestling, volleyball, tennis, team handball, power lifting and martial arts.

(b) Competition sports without spectator seating (intramural basketball, badminton, volleyball and indoor soccer).

(c) Other uses. entertainment events, troop exercises, troop assemblies, and a jogging track.

(2) Architectural Requirements.

(a) Space dividers. White ceiling-hung nets which appear opaque with proper illumination from above, will be divide activity areas within the gymnasium space. Electrically operated nets will also be manually operable from the floor and catwalk.

(b) Scoreboards. For boxing, wrestling, volleyball and basketball provide a four-sided scoreboard capable of recording scores of two teams (199 to 199), with a start/stop clock capable of recording passing time in seconds and a countdown mechanism with a preset facility. Thirty second alarms and clocks are required, one at each end of the competition basketball court, to be operated from the scorer's table, with a sound distinct from scoreboard sounds. Provide necessary power leads. For practice basketball courts, consider additional wall mounted scoreboards separate from the four-sided board in the center. An on/off switch should be located in the issue room or some easily accessible location (Consider the use of an infrared control switch).

(c) Catwalk. A functional use of a 1.8 m (6-foot) roof structure catwalk should be provided in order to position special lighting, for lamp replacement and to manipulate space dividing curtains.

(3) Electrical Requirements.

(a) Power receptacles. Receptacles and circuits required for custodial equipment will be coordinated with the local facilities engineer. Convenience receptacles will be provided as needed. The use of floor mounted receptacles is to be avoided.

(b) Emergency lighting. Emergency lighting in compliance with NFPA 101 will be provided for the gymnasium and paths of egress.

(c) Lighting. The gymnasium requires a general lighting level of 380 lux (35 foot candles) with the capacity to increase to 860 lux (80 footcandles) on tournament courts and 1080 lux (100 footcandles) on boxing/wrestling rings. Illumination will be uniform above primary playing areas for all skills sports. Light fixtures will be protected from damage by wire guards or other design features.

(d) Special Systems. The sound system will be designed to deliver a maximum sound pressure level of not less than 95 decibels to the bleacher seats. The sound system will transmit via radio waves to wireless headsets for persons with impaired hearing. Outlets must be provided for microphone locations. Outlets and wiring must be provided for the scoreboard and controls.

(4) Mechanical Requirements. The Gymnasium will often operate with only a few occupants. However, during major events the Gymnasium will be fully occupied with spectators and athletes. The heating and ventilating system(and air conditioning system if authorized by Chapter 13 of this document) will be designed with variable or multiple step capacity to satisfy these various load conditions. The design should also minimize the stratification of warm/hot air at the higher levels.

(5) Furniture and Equipment Requirements. Anchors recessed in floor for volleyball, badminton and tennis nets; electric scoreboards (see special considerations); glass backed basketball goals, ceiling mounted; mesh net dividers, electrically operated; portable floor-type boxing ring with padding, corner post and ropes; other Procurement Army (OPA) category weight equipment; recessed refrigerated drinking fountains; recessed mouth rinse receptacle; built-in retractable bleacher seating; standards and nets for volleyball, badminton and tennis; wrestling mat (either in gymnasium or exercise room; and wireless headsets.

(6) Space Allocations Requirements. See standard designs (references H-1 through H-6) for space allocations and provide a 9.2 m (30-ft) ceiling clear-height.

c. Natatorium.

(1) Functional Use.

(a) Competitive swimming and diving view by spectators.

(b) Other Uses. Fitness programs for military and civilian personnel; family recreation for military and civilian personnel; instructional programs (swimming, diving, scuba diving, snorkeling and lifesaving); deck area for instruction; storage area for competition and instructional equipment.

(2) Architectural Requirements.

(a) Provide gutters at side of pool (not skimmer pots).

(b) Technique of covering the pool with solar blankets to conserve chemicals and warmth. The solar panels should be installed when the pool water temperature drops below the comfort range in-order to extend the swimming season.

(c) Electronic timing panels at one end of the natatorium.

(d) Provide pool access for the handicapped, elderly of infirm.

1/ A removable stainless steel ramp to accommodate wheelchair use with dimensions 810 mm (32-inches) wide by 4.9 m (16 feet) long.

2/ A removable stainless steel stair.

3/ A permanent ramp.

4/ A lift at the side of the pool for therapy. (Permanently installed or portable, operated hydraulically or mechanically.)

5/ A shallow area created by a light weight aluminum platform with leg extensions to provide an ideal learning area.

(3) Electrical Requirements. Provide ground fault protected receptacles accessible to the pool deck (wall mounted) as necessary. Provide emergency lighting in accordance with NFPA 101 for natatorium and means of egress.

(4) Mechanical Requirements. The indoor heating design temperature will be between 24 C and 27 C (75 and 80 degrees F). Air velocity will be limited to 1.6 m per second (25 feet per minute) at any point up to 2.4 m (8 feet) above the pool deck.

(5) Plumbing Requirements. Hose bibs will be provided and located so that all pool deck areas can be reached with a 15.2 m (50 foot) hose. The hose bibs will be recessed and provided with back-flow prevention devices.

(6) Equipment Requirements. Access equipment for use of the handicapped, bleachers, chalkboards, removable ladders, pressure hose bottom cleaners, long handle brushes, lifeguard stands (2), life hooks, life line, life preserver and line, racing lines on bottom of pool, racing timing system, refrigerated drinking foundation, scoreboard, starting blocks, wireless headsets, 1 meter diving tower with board, 3 meter diving tower with board, and a pace clock.

(7) Spaces Allocations Requirements. Equipment storage for a pool is approximately 18,6 m^2 (200 ft^2). A dry training area on the pool side is used for practice training of diving, synchronized swimming and life saving class instruction, trampoline activities, canoe and kayak instruction, snorkeling and scuba diving classes. See standard designs (references H-1 through H-6) for space allocations and Table H-2 for swimming pool criteria.

TABLE H-2 CRITERIA FOR INSTALLATION INDOOR AND OUTDOOR SWIMMING POOLS

MILITARY POPULATION [1]	NUMBER OF POOLS AUTHORIZED	
	25-meter [2]	50-meter [2]
Up to 250	Note [3]	Note [3]
251 to 3,000	1	None
3,001 to 6,000	1	1 [4]
6,001 to 10,000 [5]	2	1

[1] Military population is defined as active duty military personnel assigned to the installation, plus 70 percent of their dependents.

[2] 25-meter pool measuring 21 m by 25 m (68 ft by 82 ft - 2 in), 50-meter pool measuring 21 m by 50 m (68 ft by 164 ft).

[3] One swimming pool not to exceed 116 m^2 (250 ft^2) of water surface area and an 74 m^2 (800 ft^2) gross area bathhouse may be provided as required.

[4] Outdoor swimming pool only.

[5] One 25-meter outdoor swimming pool with a 372 m^2 (4,000 ft^2) gross area bathhouse may be provided for each increment of 5,000 military population over 10,000. In lieu of a 25-meter outdoor swimming pool, one 50-meter outdoor swimming pool with a 604 m^2 (6,500 ft^2) gross area bathhouse may be provided for each increment of 10,000 military population over 10,000. For installations exceeding 20,000 military population, a second indoor swimming pool with bathhouse may be provided.

d. Handball/racquetball and squash courts.

(1) Functional Use.

(a) Competition games with spectator seating.

(b) Recreational games without spectator eating.

(2) Architectural Requirements.

(a) Install security box flush with wall surface for wallets, keys and ball cans. The security box door will be transparent.

(b) Court access doors will be flush or invisibly hinged with flush ring pull on interior and knob set on exterior of the court.

(c) Acoustical material on the back 2.4 m (8 feet) of the ceiling.

(d) Back wall of tempered glass including door where a spectator gallery is provided.

(e) Upper level, back wall, of courts will be open to the balcony.

(f) Tell tale panels for squash play in one racquetball court only with painted receiving/serving line in that court.

(g) Hardware for volleyball activity if desired.

(3) Electrical Requirements. Court lighting may be high intensity discharge or fluorescent and must be flush with the ceiling and protected from impact.

(4) Mechanical Requirements. Supply and return air diffusers and registers will be mounted flush on the back side walls.

(5) Equipment Requirements. None.

(6) Spaces Allocation Requirements. See standard designs (references H-1 through H-6) for space

allocations.

(a) Standard four-wall court for handball and racquetball is 6.1 m (20 feet) wide by 12.2 m (40 feet) deep by 6.1 m (20 feet) high.

(b) Standard single squash court is 5.64 m (18 feet-6 inches) wide by 9.8 m (32 feet) deep by 5.5 m (18 feet) high.

e. Exercise Room.

(1) Functional Use. Aerobics, martial arts, combative sports, fencing, classroom (continuing education and conferences), gymnastics, dance instructions, ans individual exercise classes.

(2) Architectural Requirements.

(a) Minimum ceiling clear-height of 3 m (10 feet) because of activities in exercise room.

(b) Room may be used as a classroom with portable chairs.

(c) Wall and ceiling finishes selected to reduce reverberation.

(d) Consider a movable partition between areas in the exercise room for greater flexibility (minimum STC rating of 42).

(e) Natural light.

(f) Flooring appropriate for aerobic activities.

(3) Electrical Requirements. None.

(4) Mechanical Requirements. Because of the strenuous physical exercise, a minimum of four air changes per hour will be provided.

(5) Equipment Requirements. Mirrors the full length of one wall to 2 m (7 feet) high, exercise bar mounted on wall, training bags with chains and ceiling anchors, wrestling mat (mat truck), boxing mat (mat truck), exercise mats (mat truck), wall projection screen, chalkboard, storage cabinet, shelving, and refrigerated drinking fountain.

(6) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

f. Weight rooms.

(1) Functional Use.

(a) Individual weight training.

(b) Cardiorespiratory and weight machine exercise.

(c) Body building.

(2) Architectural Requirements.

(a) Two separate weight rooms are provided in all except the 1600 m^2 (17,800 ft^2) facility. One of these weight rooms will house "free weights" while the other room will house cardiorespiratory and weight machines.

(b) A decision must be made whether to permanently install weight room equipment or to have the capacity to store all weight equipment.

(c) Allow for some seating in weight rooms for rest, evaluation and viewing of demonstration and instruction.

(d) Minimum ceiling clear-height of 3 m (10 feet).

(3) Electrical Requirements. Coordinate to determine if any of the equipment to be installed requires a source of power. Additional floor outlets may be required in the Cardiorespiratory/Weight Machines Room for increased electrical requirements.

(4) Mechanical Requirements. Because of the strenuous physical exercise, a minimum of four air changes per hour will be provided.

(5) Equipment Requirements (as required). Abdominal board, back hypertension bench, supine press bench, leg curl, leg extension, pullover machine, rowing machine, shoulder press, hip and back machine, compound leg machine, hip abduction - adduction machine, super pullover machine, combination pullover/torso arm machine, behind neck machine, behind neck/torso arm machine, torso arm machine, neck and shoulder machine, four-way neck machine, rotary neck machine, compound position arm curl machine, biceps/triceps machine, barbell and dumbbell set on rack, barbell set (Olympic standard) on rack, dumbbell set on rack, multi-station weight machine, striking bag, bicycle exerciser, double chest machine, double shoulder machine, multi-station exercise machine, multi-station arm curl machine, multi-station triceps machine, cross-country ski machine, treadmill machine, wall pulley, floor mats (with mirrors), chalkboard (wall hung), mirrors (wall hung), shelving and storage cabinet, tack-board (wall hung), projection screen (wall hung), and a wooden weight lifting platform.

(6) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

g. Bowling Alleys.

(1) Functional Use.

(a) Team competition.

(b) Recreation.

(2) Special Considerations.

(a) Architectural Requirements.

1/ Minimum ceiling height of 3.7 m (12 feet) is recommended.

2/ Consider adjacent space for a game room billiards, pool, amusement games, etc.).

(b) Electrical Requirements. Coordinate equipment locations with power outlets.

(3) Equipment Requirements. Bowling balls, bowling shoes, and lockers.

(4) Space Allocation Requirements. See standard designs (references H-1 through H-6) and Table H-3 for space criteria.

TABLE H-3 SPACE CRITERIA FOR BOWLING CENTERS

MILITARY POPULATION [1 & 2]	NUMBER OF LANES	GROSS AREA [3, 4 & 5]	
		square meters	square feet
All Locations			
Up to 250	2	251	(2,700)
251 to 1,000	4	418	(4,500)
1,001 to 1,800	6	613	(6,600)
1,801 to 2,500	8	790	(8,500)
2,501 to 3,200	10	999	(10,750)
3,201 to 3,800	12	1189	(12,800)
CONUS Locations			
3,801 to 4,900	14	1356	(14,600)
4,901 to 6,300	16	1533	(16,500)
6,301 to 7,700	18	1709	(18,400)
7,701 to 9,800	24	2295	(24,700)
9,801 to 12,600	30	2880	(31,000)
OCONUS Locations			
3,801 to 4,900	16	1533	(16,500)
4,901 to 6,300	20	1904	(20,500)
6,301 to 7,700	24	2295	(24,700)
7,701 to 9,800	32	3047	(32,800)
9,801 to 12,600	40	3781	(40,700)

[1] Military population is defined as active duty military personnel assigned to the installation, plus 40 percent of their dependents.

[2] For each increment increase of 700 military population above 12,600, two additional lanes totaling 177 m^2 (1,900 ft^2) gross area may be provided. Additional lanes will not be provided for any increase below a full increment and no additional lanes will be provided at installations in the 48 contiguous states without a complete and full study of the needs and the economic factors involved.

[3] Mechanical, electrical, and electronic equipment room space as required will be added to the gross areas shown when determining a single gross area figure for each facility.

[4] CONUS includes space for equipment and storage. For each increment of four lanes, an additional 27.9 m^2 (300 ft^2) gross area may be added for a game room for amusement games, billiards, and pool.

[5] OCONUS includes space for equipment and storage. For each increment of four lanes, 47 m^2 (500 ft^2) gross area may be added for a game room for amusement games, billiards, and pool.

h. Ice Rinks.

(1) Functional Use.

(a) Competitive ice hockey or figure skating.

(b) Recreational skating and instruction.

(2) Architectural Requirements.

(a) Width of the building will determine the number of spectator seats.

(b) A minimum width of approximately 37 m (120 feet) is needed for 1,000 seats.

(c) Dasher boards of synthetic polyethylene with a 150 mm (6 inch) to 200 mm (8 inch) kick board around the bottom should be provided. This includes exits and entrances, as well as a 3 m (10 feet) wide door for ice resurfacer's access.

(d) Floor covering, where skates are worn, of rubberized matting or poured-in-place synthetic material.

(e) Skate shop for skate rental and sharpening.

(f) Ice resurfacer storage room.

(3) Electrical Requirements. Provide scoreboard, sound systems and emergency lighting as in the gymnasium.

(4) Mechanical Requirements.

(a) Provide adequate dehumidification especially during warm weather. Desiccant dehumidification will be considered.

(b) Maintain 10 to 13 degrees C (50 to 55 F) in the ice rink.

(c) Use waste heat from the compressors for cooling the ice for supplemental building heat or for regenerating the desiccant dehumidifiers.

(d) Indirect brine, direct liquid and direct expansion refrigeration systems will be considered.

(5) Ice hardness. Different degrees of hardness are recommended for various types of skating.

(a) Hockey is -9 to -8 degrees C (15 to 17 F) (hard ice).

(b) Recreation skating is -8 to -7 degrees F (17 to 20 degrees F) (soft ice).

(c) Figure skating -7 to -6 degrees C (20 to 22 F) (softer so skates cut into the ice).

(d) Curling is -6 degrees C (22 F) and higher (soft ice without melting).

(6) Equipment Requirements. Ice resurfacer, skates for rental, and hockey equipment.

(7) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

i. Locker Rooms.

(1) Functional Use.

(a) Facility participants will change clothes and store belongings here.

(b) Coaches and team members will meet here during competition games.

(2) Architectural Requirements.

(a) Impervious and non-skid floor finish.

(b) Built-in lockers 200 mm (8 inches) to 400 mm (16 inches) above the floor on a base to permit hosing of the floor.

(c) corrosion-resistant hardware on doors.

(3) Electrical Requirements. Provide ground fault protected outlets in wet areas. Provide vapor proof light fixtures in wet areas. Provide emergency lighting.

(4) Mechanical Requirements. The air supply to the locker rooms shall be from adjacent spaces. Air has to be exhausted from these areas in all cases. This air circulated through the locker rooms will aid in odor and humidity control and temperature control if the gymnasium is eligible for air conditioning. This method of air circulation will also save the cost of a separate air handling unit for the locker spaces. None of the locker room air will be re-circulated for obvious health reasons. Ventilation requirements are stated in ASHRAE Standard 62 and the ASHRAE “Applications” handbook based on square feet of locker room space, the number of occupants and other factors. The volume of supply air from the adjacent spaces to maintain a reasonable locker room temperature must also be determined. Supply air to the locker spaces shall be provided to meet the ventilation and space condition needs.

The designer should consider that air is to be exhausted through the locker spaces from the adjacent areas. This evaluation should include the three operating modes of the gymnasium and their associated outside air settings. The air available from the adjacent spaces to be exhausted through the locker rooms must meet the minimum ventilation requirements.

In colder climates where required to maintain reasonable temperatures, perimeter radiation should be provided.

Where life cycle cost effective, heat recovery from the exhaust air using heat pipes, “run-around” coils or similar

shall be provided.

(5) Plumbing Requirements. Floor drains will be provided.

(6) Furniture and Equipment Requirements. Benches integral with locker base or stationary center aisle, chalkboard, clock, full length wall mirrors, hair drying blowers (optional coin-operated), lockers 300 mm (12 inches) wide by 300 mm (12 inches) deep by 900 mm (36 inches) high and 300 mm (12 inches) wide, mirrors, mirrors with shelf (for locker ends), refrigerated drinking fountain, and tack-board.

(7) Space Allocation Requirements. See standard designs (references H-1 through H-6).

(a) Integral bench, 2.1 m^2 per linear meter (7 ft^2 per linear foot) of lockers, is recommended.

(b) Bench in center of aisle, 2.4 m^2 per linear meter (8 ft^2 per linear foot) of lockers, is recommended.

j. Shower Room.

(1) Functional Use. Personal hygiene.

(2) Architectural Requirements.

(a) Impervious and non-skid floor finish.

(b) Floor sloping to drain.

(3) Electrical Requirements. Provide vapor proof light fixtures. Provide supplemental electrical heating fixtures requirements.

(4) Furniture and equipment. Towel bars, robe hooks, liquid soap dispensers or recessed soap dish.

(5) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

(a) Column showers, allow 1.5 m^2 (16 ft^2) per shower head on each column.

(b) Wall showers, allow 1.9 m^2 (20 ft^2) per shower head.

(c) Shower stalls, individual shower room and drying space, allow 2.8 m^2 (30 ft^2) per shower head.

k. Toilet Rooms.

(1) Functional Use. Personal hygiene.

(2) Architectural Requirements.

(a) Impervious non-skid floor finish.

(b) Locate additional mirrors away from access to lavatories.

(c) Locate paper towel dispensers away from access to lavatories.

(3) Furniture and Equipment Requirements. Toilet paper dispensers, mirrors, liquid soap dispensers, paper towel dispensers and receptacles, sanitary products dispenser.

(4) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

l. Sauna/Steam Room.

(1) Functional Use. Heat therapy for athletes.

(2) Architectural Requirements.

(a) Sauna floor, walls ceiling and benches of redwood with floor of removable redwood slats to clean the subfloor.

(b) Sauna and steam room doors will have a panic bar latch for easy exit.

(3) Electrical Requirements. Provide emergency lighting. Provide hookups for sauna/steam heaters, lighting and controls.

(4) Mechanical Requirements. Sauna temperature controls will include a maximum temperature set point and be tamper proof.

(5) Plumbing Requirements. Plumbing will be as required by the equipment manufacturer.

(6) Furniture and Equipment Requirements. These items are integral to the purchase packages.

(7) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

(a) Sauna, minimum of 2.4 m (8 feet) by 3.7 m (12 feet) by 2.1 m (7 feet) high is required.

(b) Steam room, minimum of 2.4 m (8 feet) by 2.7 m (9 feet) by 2.1 m (7 feet) high is required.

m. Laundry Room.

(1) Functional Use. Wash and dry towels and uniforms which then go to supply/issue for storage and distribution.

(2) Architectural Requirements.

(a) Allow space at machines for maintenance and repair.

(b) Provide double doors into room to accommodate wide equipment.

(3) Electrical Requirements. Provide appropriate hookups for equipment to be supplied.

(4) Furniture and Equipment Requirements.

(a) A heavy duty, 31.8 kg (70 lb) capacity, washer. A 15.9 kg (35 lb) capacity wash should be provided for the 1,460 m^2 (15,715 ft^2) size facility.

(b) A heavy duty, 31.8 kg (70 lb) capacity, dryer. A 15.9 kg (35 lb) capacity dryer should be provided for the 1,460 m^2 (15,715 ft^2) size facility.

(5) Space Allocation Requirements. See standard designs (references H-1 through H-6).

n. Supply/Issue.

(1) Functional Use.

(a) Storage and distribution of athletic equipment, uniforms and towels.

(b) Reservation of racquetball/handball courts.

(2) Architectural Requirements.

(a) Minimum 2.7 m (9-foot) ceiling height.

(b) Floor must be impervious to wheeled laundry and equipment carts.

(3) Electrical Requirements. Provide sound system control console with override capacity.

(4) Plumbing Requirements. A floor drain will be provided.

(5) Furniture and Equipment Requirements. Counter, desk and chair, pair board, racks and bins for equipment, shelving both flat and tilted, tack-board, sound system control console.

(6) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

o. Manager's Office or Area.

(1) Functional Use. A working center for the facility manager.

(2) Architectural Requirements. Provide Private office for 7200 and 8500 m^2 (80,000 and 94,450 ft^2) type facilities. Provide a sound system control console with override capacity.

(3) Electrical Requirements. Provide sound system control console with override capacity.

(4) Furniture and Equipment Requirements. Credenza, desk and chair, file cabinet, two side chairs, sound system control console.

(5) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations, but having a minimum area of 3.1 m (10 feet) by 3.7 m (12 feet) or 11.2 m^2 (120 ft^2).

p. Program Director's Area.

(1) Functional Use. A working center for the facility Program Director.

(2) Furniture and Equipment Requirements. desk and chair, file cabinet, bulletin board, either 1.2 m (4 feet) by 1.8 m (6 feet) or 1.5 m (5 feet) by 2.1 m (7 feet), and two side chairs.

(3) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations, but having a minimum area of 3.7 m (12 feet) by 3.1 m (10 feet) or 11.2 m^2 (120 ft^2).

q. Clerical Area.

(1) Functional Use. A working center for the facility secretary.

(2) Furniture and Equipment Requirements. Desk and chair, file cabinet, and two side chairs.

(3) Space Allocation Requirements. See standard designs (references H-1 through H-6). Minimum area of 2.4 m (8 feet) by 3.7 m (12 feet) or 8.9 m^2 (96 ft^2).

r. Conference Room.

(1) Functional Use. A meeting center for the facility staff.

(2) Architectural Requirements. Provide acoustical privacy.

(3) Furniture and Equipment Requirements. Table with 10 chairs, chalk and tack boards, and side table for audio-visual equipment.

(4) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations, but having a minimum area of 3.7 m (12 feet) by 5.5 m (18 feet) or (20.1 m^2 (216 ft^2).

s. Pool Manager/Lifeguard Office.

(1) Functional Use. A working center for the pool manager/lifeguard.

(2) Architectural Requirements. First aid station.

(3) Furniture and Equipment Requirements.

(a) Desk and chair (one or two according to specific program).

(b) Side chairs (according to specific program).

(4) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

(a) Minimum area for one person 2.1 m (7 feet) by 2.1 m (7 feet) or 4.6 m^2 (49 ft^2).

(b) Minimum area for two people 3.1 m (10 feet) by 4.3 m (14 feet) or 13 m^2 (40 ft^2).

t. Lobby.

(1) Functional Use. The lobby is a central organizational element of the building providing access to major activities for both spectators and participants.

(2) Architectural Requirements.

(a) Large, open two-story spaces should be developed for a dramatic effect.

(b) Visibility is encouraged whenever possible, opening the adjacent activity areas to the view of anyone entering the facility.

(3) Electrical Requirements. Provide outlets for lighting display cases and emergency lighting.

(4) Furniture and Equipment Requirements. Ash urn, display cases, door mats, lounge seating, and public telephones.

(5) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

u. Public Toilets.

(1) Functional Use. For use by spectators, visitors and staff.

(2) Architectural Requirements.

(a) Minimize potential of congestion at peak use periods.

(b) Minimum ceiling height of 2.4 m (8 feet).

(3) Mechanical Requirements. Provide adequate ventilation.

(4) Plumbing Requirements. Provide floor drains.

(5) Furniture and Equipment Requirements. Mirrors, paper towel dispenser, toilet tissue dispenser, and waste receptacles.

(6) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space allocations.

v. Vending Area.

(1) Functional Use. Provide snack food and drinks for purchase by spectators, participants and staff.

(2) Architectural Requirements.

(a) Security surveillance where possible (keep area open as possible).

(b) Frequent maintenance required.

(c) Provide for consumption of food and drink.

(3) Furniture and Equipment Requirements. Ash urn, vending machine (candy, coffee, ice cream, soft drinks, cigarette), and waste receptacles.

(4) Space Allocation Requirements. See standard designs (references H-1 through H-6) for space

allocations.

(a) Allow 1000 mm (40 inches) minimum depth to accommodate machines.

(b) Allow minimum 1100 mm (3 feet-8 inches) for circulation at a single loaded condition.

(b) Allow minimum 1600 mm (5 feet-4 inches) circulation at double loaded condition.

6. REFERENCES

H-1 DEF 740-28-01, Department of the Army Standard Design Package, 1600 m^2 (17,222 ft^2) Physical Fitness Facility, March 1995

H-2 DEF 740-28-02, Department of the Army Standard Design Package, 3000 m^2 (32,292 ft^2) Physical Fitness Facility, March 1995

H-3 DEF 740-28-03, Department of the Army Standard Design Package, 3300 m^2 (35,521 ft^2) Physical Fitness Facility, March 1995

H-4 DEF 740-28-04, Department of the Army Standard Design Package, 5500 m^2 (59,202 ft^2) Physical Fitness Facility, March 1995

H-5 DEF 740-28-05, Department of the Army Standard Design Package, 7400 m^2 (79,653 ft^2) Physical Fitness Facility, March 1995

H-6 DEF 740-28-06, Department of the Army Standard Design Package, 8750 m^2 (94,184 ft^2) Physical Fitness Facility, March 1995

H-7 DoD Directive 1015.6, Funding of Morale, Welfare and Recreation (MWR) Programs, August 3, 1984

H-8 ER 1110-345-710, Drawings, 17 April 1981

H-9 ER 1110-345-100, Design Policy for Military Construction, 15 February 1994

H-10 TM 5-803-5, NAVFAC P-960, AFM 88-43, Installation Design, 1 March 1981

H-11 TM 5-803-13, Landscape Design and Planting, August 1988

H-12 ER 1110-345-122, Interior Design, 31 October 1989

H-13 TM 5-807-10, Signage, December 1983

H-14 EP 310-1-6a, Sign Standards Manual, Volumes I and II

H-15 AR 385-30, Safety Color Code Markings and Signs, October 1983